

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)	Confirmation No.: 3382
Shunpei YAMAZAKI et al.)	Group Art Unit: 2895
Application No.: 09/917,633)	Examiner: Thien F. Tran
Filed: July 31, 2001)	
For: SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME)	Date: <u>January 28, 2010</u>

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop: AFTER FINAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the Pre-Appeal Conference Pilot Program, and further to the Examiner's Final Office Action dated August 28, 2009 and an Advisory Action mailed December 17, 2009, Applicants hereby file this Pre-Appeal Brief Request for Review. This Request is accompanied by the concurrent filing of a Notice of Appeal. Applicants hereby request formal review of the Final Office Action mailed August 28, 2009.

Priority and Claim Rejections - 35 U.S.C. § 112, 1st paragraph

First and foremost, the Examiner has improperly maintained that the disclosure of the prior-filed application, Application No.: 09/848,307, fails to provide adequate support or enablement in the manner provided by the first paragraph of 37 U.S.C. § 112 for one or more claims in the application, and that claims 6 and 14-32 fail to comply with the written description requirement set forth under 37 C.F.R. § 112, first paragraph. The arguments presented below are directed to the Examiner's rejection of the claims under 35 U.S.C. § 112, first paragraph, and in turn Applicants' claim to priority.

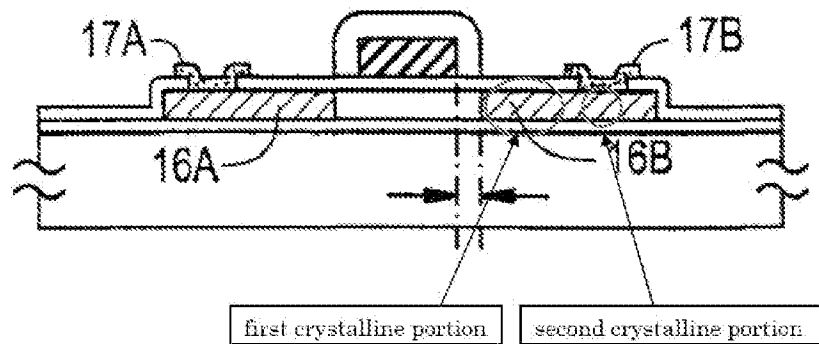
In response to Applicants' argument that the second crystalline portion is in contact with a metal (see, e.g., item 17A or 17B in FIG. 1B) as seen in both the present disclosure and that the U.S. priority document 09/848,307, and the Examiner states in the Advisory Action:

“Applicants have failed to provide convincing evidence
that the specification clearly states or discloses that the metal is

added to the second crystalline portion. Note that the second crystalline portion in contact with a metal does not mean that metal is added directly to the second crystalline portion.” (see the Advisory Action, e.g., ll. 1-4 of the Continuation Sheet (PTO-303))

However, both the present disclosure (see U.S. Pub. No. 2001/0045559 A1, e.g., paragraph [0026]) and priority document 09/848,307 (see issued Patent No.: 6,413,842 B2, e.g., col. 4, ll. 32-35) state: “...holes were created on the silicon oxide film 13 on the impurity regions **to form nickel silicide (or nickel) films 17A and 17B so that they adhere to the semiconductor region 12** through the holes.” (Emphasis added)

FIG. 1B



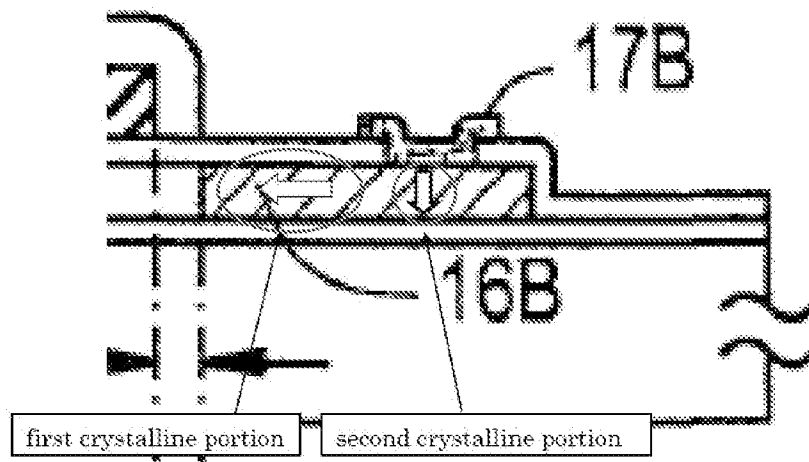
Thus, as seen in the above copy of FIG. 1B, metal layers 17A and 17B are formed directly on the second crystalline portion of 16A and 16B, when the metal layers 17A and 17B are formed in the holes of the silicon oxide film 13. Consequently, the Examiner has improperly maintained that “Applicant has failed to provide support that metal is added to the second crystalline portion.”

Moreover, the Examiner’s assertion that “unless the specification explicitly discloses that metal is added to the second crystalline portion, one cannot assume that metal would be added to the second crystalline portion as alleged by applicant” (see the Advisory Action, e.g., Continuation Sheet) is improper since paragraph [0054] (emphasis added) of the publication of the present application (U.S. Pub. No.: 2001/0045559 A1) and col. 8, ll. 41-49 of the issued patent of the priority application (U.S. Patent No.: 6,413,842 B2) state: “FIG. 5 shows a study

result on the nickel concentration in a region denoted by the reference number 50 after finishing the crystallization process in SIMS. This region is a region crystallized by the crystal growth **from the region into which nickel was directly introduced** and functions as a channel forming region of the TFT. It was confirmed that the concentration of **nickel in the region where nickel was directly introduced** presents a concentration higher than the concentration distribution shown in FIG. 5 by one digit.”

Regarding the second crystalline portion, Applicants contend that this feature is the portion which is in contact with a metal (see, e.g., item 17A or 17B in FIG. 1B), and that the metal is added directly to the second crystalline portion. Applicants contend that the area adjacent to the second crystalline portion is the first crystalline portion, and crystallization is advanced from the second crystalline portion to the first crystalline portion. Both of paragraph [0054] (emphasis added) of the publication of the present application (U.S. Pub. No.: 2001/0045559 A1) and col. 8, ll. 41-49 of the issued patent of the priority application (U.S. Patent No.: 6,413,842 B2) further support this feature.

From the above disclosure, Applicants assert that the crystallization is advanced in the direction indicated by arrows as shown in the expanded portion of FIG. 1B below.



Consequently, it is inherent that the structure of the first crystalline portion is different than that of the second crystalline portion, and Applicants respectfully assert that the present application complies with the requirements set forth in 37 C.F.R. § 112, first paragraph, as well as the conditions for receiving the benefit of an earlier filing date under 35 U.S.C. §§ 120, 121.

Applicants request that the rejection under 37 C.F.R. § 112, first paragraph be withdrawn, and that the subject application receive the benefit of the priority date of Application No. 09/848,307.

Claim Rejections - 35 U.S.C. § 102 and § 103

Turning now to the prior art rejection of the claims, an improper rejection of claims 6, 14-17, 19-21, 23-25, 27-29, 31, and 32, insofar as in compliance with 35 U.S.C. § 112, stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Joo et al. (U.S. Patent No.: 6,097,037) (*Joo*, hereinafter) has been maintained by the Examiner. Additionally, the Examiner has maintained an improper rejection of claims 6 and 14-32, insofar as in compliance with 35 U.S.C. § 112, also stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Hideaki Oka (JP 02-140915) (*Hideaki*, hereinafter).

Each of the claims recite a specific combination of features that distinguishes the invention from the prior art in different ways. Applicants respectfully submit that the features of claim 6 and 14-16, which are supported by the priority application for at least the reasons stated above, and thus subject application has an earlier effective filing date than that of *Joo*. Consequently, *Joo* does not constitute prior art, and the rejection of independent claims 6 and 14-16 should be withdrawn.

Regarding the Examiner's rejection of independent claims 6 and 14-16 as allegedly being anticipated by *Hideaki*, Applicants respectfully submit that independent claims 6 and 14-16, and the claims dependent therefrom, are patentably distinguishable over *Hideaki*, since *Hideaki* fails to disclose, teach, or suggest all of the features recited in the pending claims. For example, independent claims 6 and 15 are directed to, *inter alia*, a transistor including the features of:

“...wherein the second crystalline portion is a region where a metal was directly added, and wherein the first crystalline portion is a region where crystallization advanced from the second crystalline portion”.

Independent claims 14 and 16 are directed to, *inter alia*, a transistor including the features of:

“...wherein the second crystalline portion has a surface through which a metal is added, and wherein the first crystalline portion is a region where crystallization advanced from the second crystalline portion”.

Hideaki discloses a method for forming a semiconductor device including an insulating substrate 201 on which is formed an amorphous layer 202, such as silicon (see *Hideaki*, e.g., page 9 of the full English translation provided by the Examiner, and FIG. 2b). In addition, *Hideaki* discloses that by patterning the amorphous layer 202 to include island regions 205 and connecting regions 206, even when multiple crystal nuclei are formed in the seed regions, any of the connecting regions 206, which are superior, are selected for fast crystal growth, and the island regions are monocrystallized (see *Hideaki*, e.g., page 11 of the full English translation provided by the Examiner, and FIG. 3c).

FIGS. 2b and 2c of *Hideaki* illustrate that a source or drain region is not used as the seed region, as in the present invention, but rather the seed region of *Hideaki* is an amorphous layer 202 on which a metal layer 204 is formed.

Contrary to the present invention, *Hideaki* discloses the island region 205 is monocrystallized, and fails to disclose a source or drain region having a first crystalline portion adjacent to the channel region and a second crystalline portion adjacent to the first crystalline portion, as in the present invention. For at least the reasons stated above, *Hideaki* fails to anticipate each and every feature recited in independent claims 6 and 14-16.

Accordingly, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. § 102(b), and the allowance of independent claims 6 and 14-16. Claims 18-20, 22-24, 26-28, and 30-32 are allowable at least by virtue of their dependency from one of the independent claims, but also because they are distinguishable over the prior art. Accordingly, Applicants respectfully request the allowance of these claims.

Except for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 19-2380. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

Date: January 28, 2010

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